

January 16, 2008

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	Bozeman Wastewater System Upgrades
Location	Bozeman, Montana
Project Number	C303105-01
Total Cost	\$43,596,000 (Phase 1 only)

From the 2007 Wastewater Facilities Plan, it is recommended that the existing wastewater treatment system be upgraded to an advanced biological nutrient removal system to address effluent quality requirements and capacity issues.

Based on the priority of the needed improvements and the desire of the City to spread out the capital outlays necessary to construct the required facilities, the treatment plant improvements will be implemented in three phases. Major phase 1 improvements include construction of the following: a new head works building with fine screens and grit removal; two (2) biological nutrient removal bioreactor basins; two (2) secondary clarifiers; a new ultra-violet (U.V.) light disinfection system; a new anaerobic digester; a screw press sludge dewatering facility; an emergency power generator; and a new administration and laboratory building.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites will not be adversely impacted as a result of the proposed project. No significant long-term environmental impacts were identified. An environmental assessment (EA), which describes the project and analyzes the impacts in more detail, is available for public scrutiny at the following locations:

Department of Environmental Quality  
1520 East Sixth Avenue  
P.O. Box 200901  
Helena, MT 59620-09011  
[mabrahamson@mt.gov](mailto:mabrahamson@mt.gov)

City of Bozeman  
411 E. Main Street  
P.O. Box 1230  
Bozeman, MT 59771-1230

Comments on the EA may be submitted to the Department of Environmental Quality at the above address. After evaluating substantive comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. If no substantive comments are received during the comment period, or if substantive comments are received and evaluated and the environmental impacts are

still determined to be non-significant, the agency will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,

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Todd Teegarden, Bureau Chief  
Technical and Financial Assistance Bureau

# BOZEMAN WASTEWATER SYSTEM UPGRADES

## ENVIRONMENTAL ASSESSMENT

### I. COVER SHEET

#### A. PROJECT IDENTIFICATION

Applicant: City of Bozeman  
Address: PO Box 1230, Bozeman, MT 59771  
Project Number: C303105-01

#### B. CONTACT PERSON

Name: Bob Murray  
Engineering Division, City of Bozeman  
Address: PO Box 1230, Bozeman, MT 59771  
Telephone: (406) 582-2300

#### C. ABSTRACT

The City's wastewater treatment facility is an activated sludge plant originally built in 1970. The plant has been expanded and modified five times. The plant discharges treated wastewater directly to the East Gallatin River. Much of the existing treatment plant's major process equipment is over 25 years old, and based on current flows several key treatment units are operating at their design hydraulic capacity. Current loadings to the plant exceed the design by approximately 10 to 35 percent which will worsen as the community grows. The City of Bozeman is experiencing rapid growth (~5% annually) which is anticipated to continue through the next 20 years. This growth will result in flows and loads that will be an increase of more than 100 percent over the existing capacity. Recently, the Montana Department of Environmental Quality (MDEQ) imposed more stringent ammonia, nitrogen, and phosphorus limits in the City's Montana Pollutant Discharge Elimination System (MPDES) permit. The existing facility is currently very near or is exceeding the permitted loads for total nitrogen and total phosphorus. In addition, the Bozeman WWTP discharges to the East Gallatin River which is listed on the State's 2006 303(d) list of impaired water bodies. As a means of restoring water quality in the river, a total maximum daily load (TMDL) that will lower nutrient loadings to the river will be prepared in the future by the MDEQ. The TMDL may further limit the amount of nitrogen and phosphorous that the WWTP can discharge to the river.

In order to address the aging equipment concerns and provide capacity for the design wastewater flows and loads through the planning period, the wastewater treatment facility will need to be upgraded, expanded, and additional processes added. In addition, the facility's new discharge limitations (as well as any future TMDL related limits) will require that a more advanced treatment process capable of nutrient removal be incorporated into the wastewater facilities design. Two alternatives for addressing the City's need to upgrade and expand its wastewater treatment facility were evaluated. The alternatives included 1) centralized treatment and 2) satellite treatment. Based on cost, growth management, technical feasibility, environmental compliance, regulatory compliance, compatibility with existing facilities, constructability, and ease of maintenance, the centralized treatment concept is the preferred alternative. The existing treatment system will be upgraded with the 5-Stage Bardenpho Process followed by

secondary clarification and effluent filtration. The 5-Stage Bardenpho process is an advanced secondary treatment system that has the ability to achieve very low total phosphorus and nitrogen concentrations in its discharge. It is also recommended that the existing chlorine gas disinfection system be replaced with an ultraviolet (U.V.) light disinfection system. The City will continue to stabilize their sludge with anaerobic digestion and to land apply biosolids. Screw press dewatering facilities will be added to reduce the volume of solids that must be transported for disposal.

Based on the priority of the needed improvements and the desire of the City to spread out the capital outlays necessary to construct the required facilities, the treatment plant improvements will be implemented in three phases. Phase 1 improvements will have a treatment capacity of 8.5 MGD and will include the following improvements:

- New headworks building equipped with fine screens and grit chambers
- New primary effluent lift station
- New fermentation unit with odor control
- Two new biological nutrient removal (BNR) bioreactor basins
- Conversion of existing aeration basins to a BNR bioreactor
- New blower system to serve the BNR bioreactors
- Two new secondary clarifiers and a new RAS/WAS pump station
- New UV disinfection system and structure
- New liquid chlorine storage/feed system
- New anaerobic digester and a digester control building
- New dewatering and solids storage facility
- New Administration and laboratory building
- New emergency power engine generator to operate key unit processes
- New 42-in outfall pipeline
- Site work, yard piping, and landscaping

While the TMDL process is not complete for the East Gallatin River, construction of the proposed improvements is a necessary first step in allowing the facility to meet the permit limits that result from the TMDL process. The proposed project will also significantly improve the operability, reliability, and treatment capability of the Bozeman wastewater treatment facilities. All proposed improvements would be designed to meet state design standards in accordance with Circular DEQ-2.

The Phase 1 improvements are estimated to cost \$43,596,000. It is anticipated that the project will be funded through the City's capital reserve fund and impact fees, a low interest loan (3.75%) obtained from the State Revolving Fund (SRF) loan program, and a small STAG grant.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species and historical sites are not expected to be adversely impacted as a result of the proposed project. Additional environmental impacts related to land use, water quality, air quality, public health, energy, noise, growth, and biosolids disposal were also assessed. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person may construct, extend, or use a public sewage system until the DEQ has reviewed and approved the plans and specifications for the project. Under the Montana Water Pollution Control State Revolving Fund Act, the DEQ may loan money to municipalities for construction of public sewage systems.

The DEQ, Technical and Financial Assistance Bureau, has prepared this Environmental Assessment because the DEQ received a Preliminary Engineering Report for its review and written approval and an application for a State Revolving Fund (SRF) loan for the project. The DEQ is currently reviewing this information. If complete, a written approval

will be prepared and provided to the City. This EA has been prepared to satisfy the requirements of the Montana Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA).

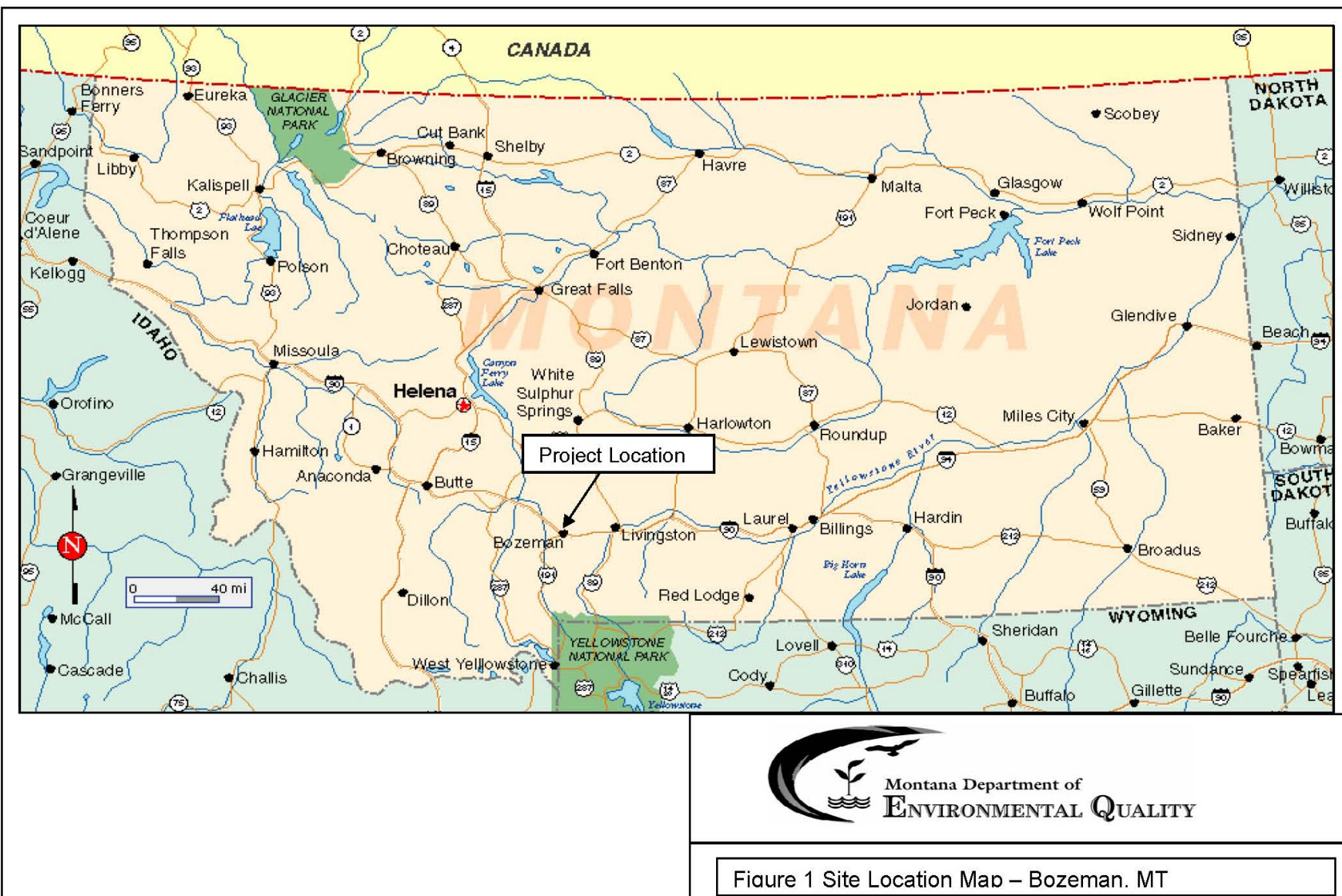
D. COMMENT PERIOD

Thirty (30) calendar days

II. PURPOSE OF AND NEED FOR ACTION

The City of Bozeman is located in southwest Montana along Interstate 90 in Gallatin County (see Figure 1). The planning area includes the incorporated city limits as well as adjacent areas that are likely to be developed over the 20 year planning period (see Figure 2). The City's wastewater treatment facility is an activated sludge plant originally built in 1970. The plant has been expanded and modified five times with the most recent improvements completed in early 2005. The plant discharges treated wastewater directly to the East Gallatin River. The plant also has 18 infiltration/percolation (I/P) cells for use during emergency operation. The existing WWTP was designed primarily to remove total suspended solids (TSS), carbonaceous BOD (cBOD) and ammonia. Based on permit compliance, the existing plant continues to perform very well in the removal of these pollutants. However, much of the existing treatment plant's major process equipment is over 25 years old, and based on current flows several key treatment units are operating at their design capacity. Furthermore, current loadings to the plant exceed the design by approximately 10 to 35 percent. In recent years the City of Bozeman has experienced rapid growth (~ 5% annually) which is anticipated to continue through the next 20 years. This growth will result in flows and loads that will be an increase of more than 100 percent over the existing capacity. Recently, the Montana Department of Environmental Quality imposed more stringent ammonia, nitrogen, and phosphorus limits in the City's Montana Pollutant Discharge Elimination System (MPDES) permit. As shown in Table 1 the existing facility is currently very near or is exceeding the permitted loads for total nitrogen and total phosphorus. The existing wastewater treatment plant (WWTP) is shown in Figure 3. The WWTP and infiltration/percolation (I/P) cells in relation to the East Gallatin River are shown in Figure 4.

In order to address the aging equipment concerns and provide capacity for the design wastewater flows and loads through the planning period, the wastewater treatment facility will need to be upgraded, expanded, and additional processes added. In addition, the current and anticipated discharge limitations will require that a more advanced treatment process capable of nutrient removal be incorporated into the wastewater facilities design. Solids handling facilities will also require modifications to handle the increase volume of solids being generated at the plant.



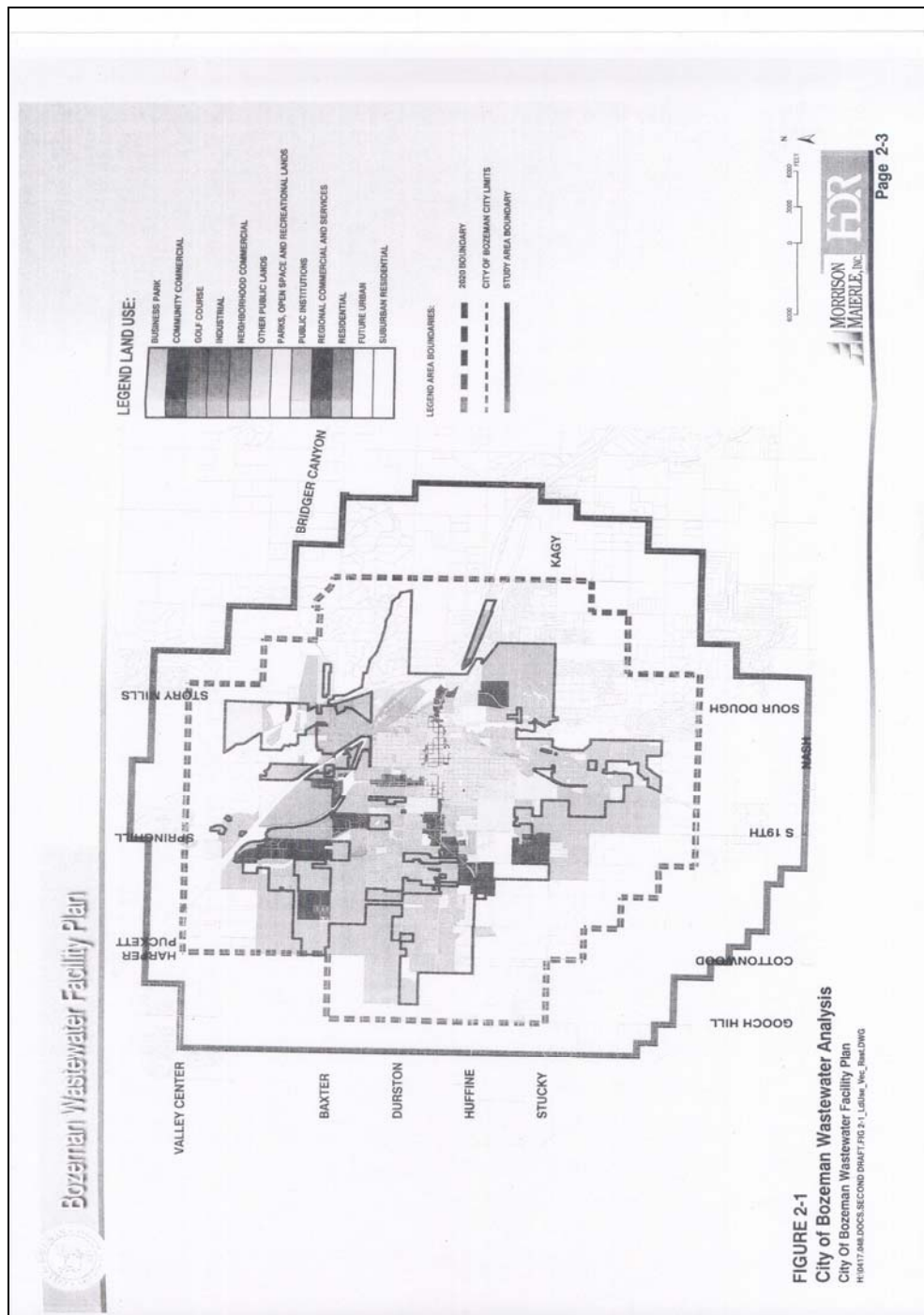


Figure 2  
Planning Area



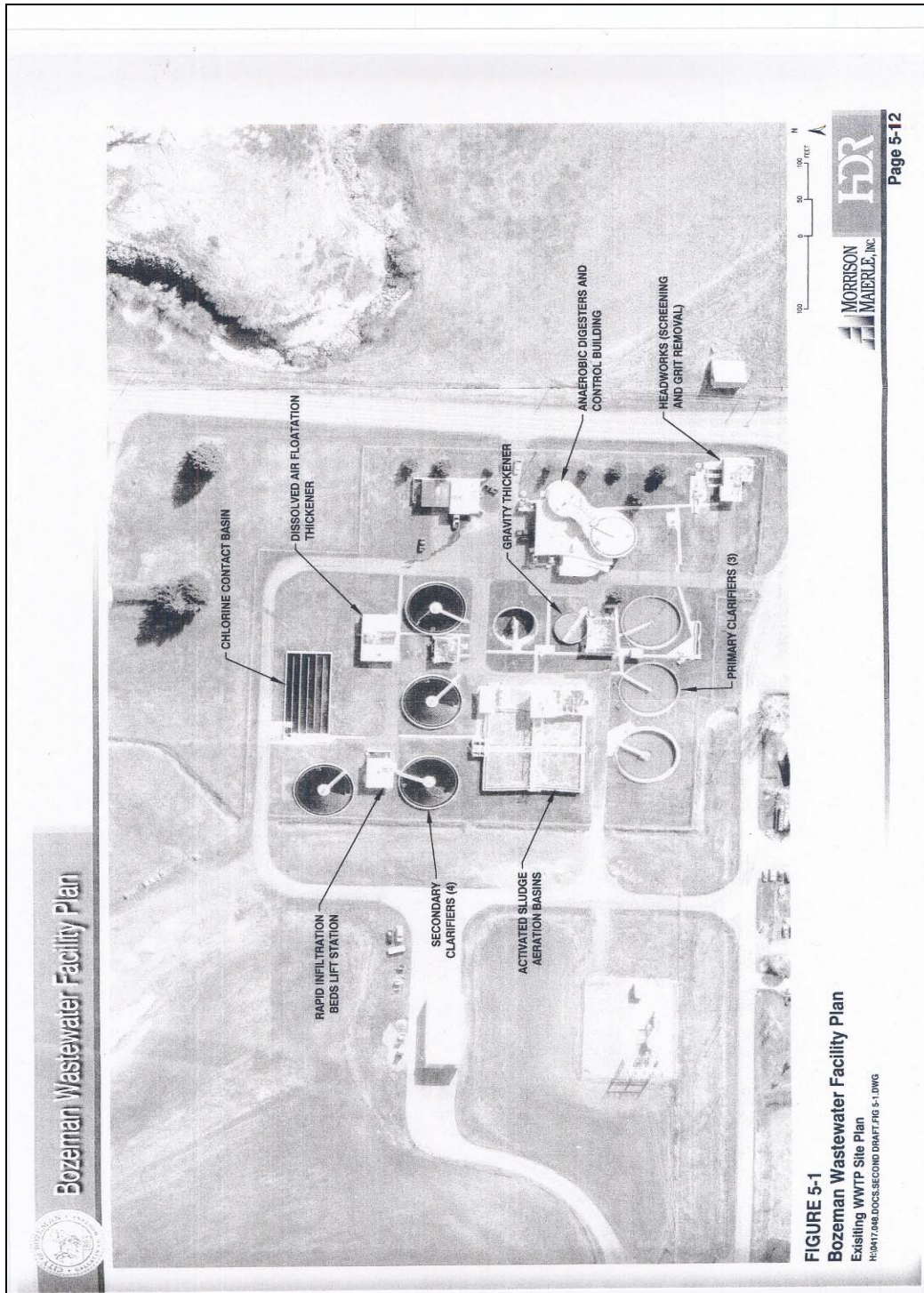


Figure 3  
Existing Wastewater Treatment Facility



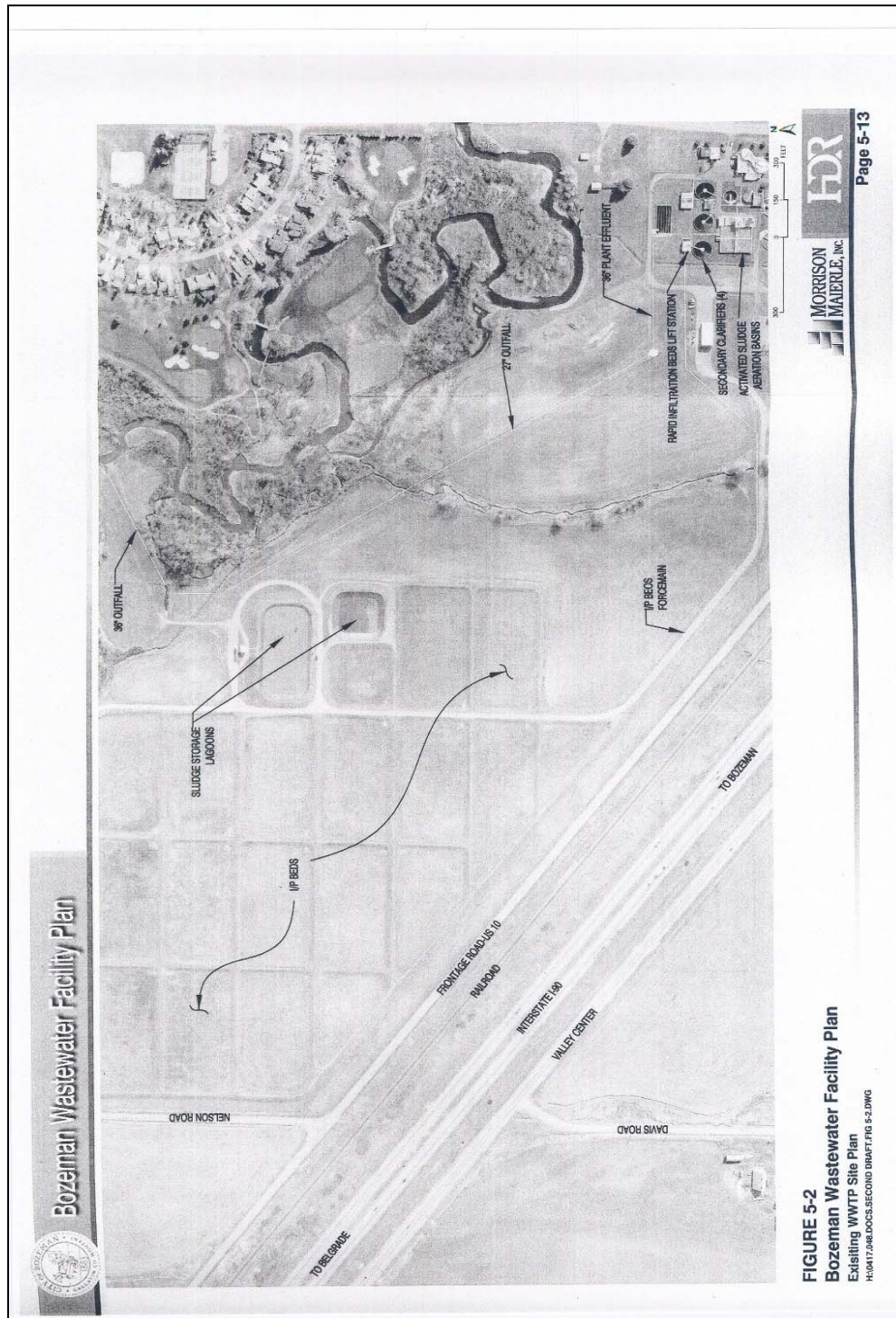


Figure 4  
Existing WWTP and I/P cells

<b>Table 1</b> <b>Discharge Nutrient Limits and Plant Performance</b>				
<b>Parameter</b>	<b>New MDES Permit Limits</b>		<b>Current Facility Performance</b>	<b>Phase 1 Facility Anticipated Performance</b>
<b>Flow</b>	N/A		6.0 MGD	8.5 MGD
<b>Ammonia</b>	1.52 mg/L		0.4 mg/L	0.6 mg/L
<b>Total Nitrogen</b>	971 lbs/day <sup>1</sup>	1072 lbs/day <sup>2</sup>	900 lbs/day	532 lbs/day
<b>Total Phosphorus</b>	199 lbs/day <sup>1</sup>	211 lbs/day <sup>2</sup>	250 lbs/day	71 lbs/day

<sup>1</sup>Effective during the growing season June 1 thorough September 30

<sup>2</sup>Effective during the non-growing season October 1 through May 31

### III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Three alternatives for addressing the City's need to upgrade and expand its wastewater treatment facility were evaluated. The planning effort was to define the condition of existing infrastructure, describe improvements necessary to protect water resources, accommodate growth, evaluate growth trends, estimate future population, and develop a capital improvement plan for the wastewater system. The alternatives included:

1. No Action
2. Central Treatment
3. Satellite Treatment

1. NO ACTION – The no action alternative would involve making no improvements to the City's wastewater treatment facility. Many of the treatment system unit processes are operating at or close to capacity. In addition, the City was recently issued an MPDES permit that includes more stringent limitations for ammonia, nitrogen, and phosphorus. Additional treatment is necessary in order to meet these limitations. Given these increasing regulatory requirements, as well as continued growth in area, this alternative was not considered viable and is not evaluated further.
2. CENTRAL TREATMENT – This alternative considered expanding the City's existing treatment plant to provide capacity for future anticipated flows and loads. The City's existing wastewater treatment facility would be retrofitted to provide for biological nutrient removal (BNR). Four BNR systems were evaluated including the Winter Modified Johannesburg Process, the 5-Stage Bardenpho Process, Simultaneous Nitrification/Denitrification (SNDN), and a Membrane Bioreactor (MBR). Each of these systems is capable of meeting the treatment goals and can provide the following level of treatment or better:  $\leq 5$  mg/L BOD<sub>5</sub>,  $\leq 5$  mg/L TSS,  $\leq 7.5$  mg/L Total Nitrogen, and  $\leq 0.2$  mg/L Total Phosphorus. Due to significantly higher capital costs associated with construction of an MBR plant, this process was eliminated from further consideration. The remaining three alternatives all have similar capital and operating costs. The 5-Stage Bardenpho process was ultimately selected over the others since it is a well established

process that will provide the necessary flexibility to address changes in influent characteristics as well as future regulations. The 5-Stage Bardenpho process is an advanced secondary treatment system that has the ability to achieve very low total phosphorus and nitrogen concentrations in its discharge. A schematic of this process is shown in Figure 5. As shown in Figure 5 this process contains several bioreactor basins each of which utilizes an anaerobic tank and a series of anoxic and aerobic zones to remove phosphorus and nitrogen through biological treatment. Further treatment is provided through secondary clarification and disinfection. The advantages of continuing with centralized treatment include cost savings as it achieves economies of scale by building upon the historical investment already made with the existing facility and that operational effort and maintenance is concentrated on a single facility enabling a high degree of staff skill and competency to be developed and maintained. In addition there is already public acceptance of the treatment plant being located at this site, and no additional land will need to be purchased. The primary disadvantage of centralized treatment is that the existing facility discharges to the East Gallatin River which is a water quality limited stream which will have a total maximum daily load (TMDL) developed in the future. A TMDL could significantly limit the amount of pollutants most notably nutrients (nitrogen and phosphorous) that the WWTP can discharge to the river. The resulting permit limits from the TMDL process may require supplementary upgrades to the secondary treatment system before effluent from the wastewater treatment facility would meet the new permit limits.

3. **SATELLITE TREATMENT** - This alternative considered maintaining the current facility to provide service to a portion of the planning area and constructing an additional wastewater treatment plant at the west end of the city to serve the growth that is occurring in that area. This alternative decentralizes service by using multiple treatment centers. It also allows for decentralized management, including potential ownership of one or more satellite treatment plants by Gallatin County, or local water and sewer districts. While a satellite treatment center in outlying areas would be an improvement over the use of septic tanks, this alternative has several disadvantages when compared to centralized treatment. The satellite treatment approach is more expensive due to the loss of economies of scale and complex treatment systems that incorporate nutrient removal may be more difficult to operate and maintain in multiple locations. Site selection and land acquisition for new treatment plants and discharge locations will be very challenging as well. The ability of satellite treatment centers to obtain a new discharge permit on water quality limited stream segments in the Gallatin watershed may be difficult to obtain from the regulatory agency.

It should be noted that Gallatin County has conducted a more detailed engineering evaluation of the need for a community wastewater treatment plant on the west end of the planning area. However, the City of Bozeman did not participate in this evaluation and as such; its findings are not presented in this assessment.

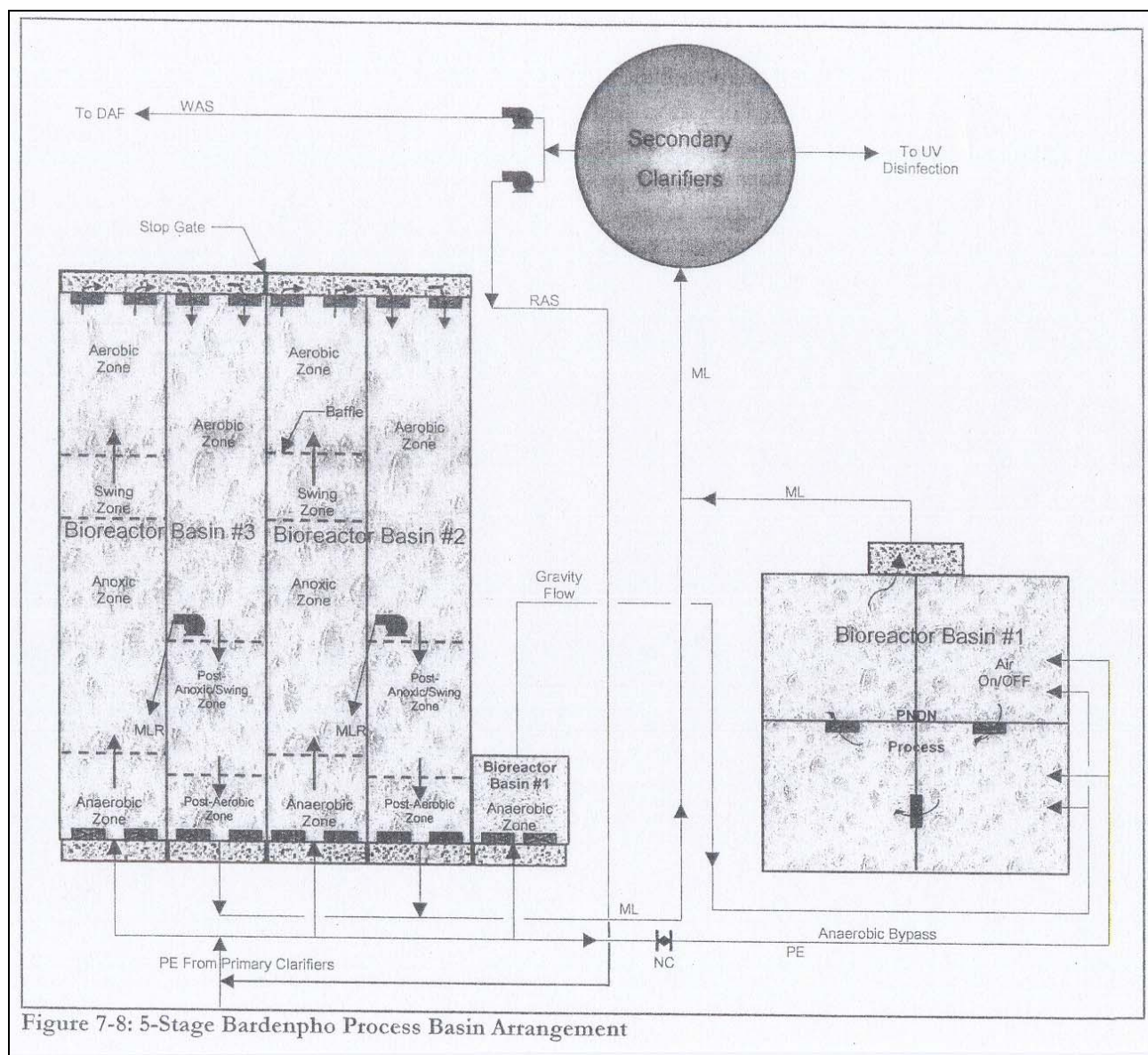


Figure 7-8: 5-Stage Bardenpho Process Basin Arrangement

Figure 5  
5 – Stage Bardenpho Process

## B. SELECTED ALTERNATIVE

The central treatment and satellite treatment alternatives were compared relative to one another based on the following criteria: cost, growth management, technical feasibility, environmental compliance, regulatory compliance, compatibility with existing facilities, constructability, and ease of maintenance. It was determined that the centralized approach has the lowest cost and meets the requirements to accommodate growth, protect environmental quality, and achieve regulatory compliance.

From the Wastewater Facilities Plan, the recommended upgrade to the liquid stream processes is an advanced biological nutrient removal system (5-Stage Bardenpho Process) with secondary clarification and effluent filtration. It is also recommended that the existing chlorine gas disinfection system be replaced with an ultraviolet (U.V.) light disinfection system. The City will continue to stabilize their sludge with anaerobic digestion and to land apply biosolids. However, it is recommended that screw press dewatering facilities be added. The total cost of the wastewater treatment plant upgrades is estimated to be \$55,050,000 (phases 1-3).

Based on the priority of the needed improvements and the desire of the City to spread out the capital outlays necessary to construct the required facilities, the treatment plant improvements will be implemented in three phases. Phase 1 improvements will have a treatment capacity of 8.5 MGD. The anticipated treatment performance from phase 1 improvements utilizing the 5-Stage Bardenpho Process is shown in Table 1. In the future, the potential TMDL and associated MPDES permit effluent limits may require supplementary upgrades to the secondary treatment system for additional nutrient removal. The phase 1 improvements to the wastewater treatment facility include:

- New headworks building equipped with fine screens and grit chambers
- New primary effluent lift station
- New fermentation unit with odor control
- Two new biological nutrient removal (BNR) bioreactor basins
- Conversion of existing aeration basins to a BNR bioreactor
- New blower system to serve the BNR bioreactors
- Two new secondary clarifiers and a new RAS/WAS pump station
- New UV disinfection system and structure
- New liquid chlorine storage/feed system
- New anaerobic digester and a digester control building
- New dewatering and solids storage facility
- New Administration and laboratory building
- New emergency power engine generator to operate key unit processes
- New 42-in outfall pipeline
- Site work, yard piping, and landscaping

These improvements and their location within the existing plant layout are shown in Figure 6.



## C. COST COMPARISON

It was determined that the centralized treatment approach would be less costly than the satellite approach, largely because no additional land would be needed and the existing plant expansion offers economies of scale in both capital facilities and in operations.

The Phase 1 improvements are estimated to cost \$43,596,000. It is anticipated that approximately \$24,360,500 of the project will be funded through the City's capital reserve fund and impact fees. The City has received a \$162,500 State and Tribal Assistance Grant (STAG) to purchase and install an emergency back-up power generator. A State Revolving Fund loan of around \$19,073,000 will be used to fund the rest of the project. Residential user rates are expected to increase from \$21.65/month to approximately \$28.13/month. The financial impact of this project on the system users is shown in Table 2. Based on the EPA guidance for project affordability, the proposed project will result in a monthly cost per household that is 1% of the monthly median household income and therefore is not expected to impose a substantial economic hardship on household income.

<b>Table 2 Project Affordability</b>	
Existing Monthly sewer rate	\$21.65
New monthly debt service and O&M increase	\$ 6.48
Total monthly user cost <sup>1</sup>	\$28.13
Monthly median household income (mMHI) <sup>2</sup>	\$2679.67
User rate as a percentage of mMHI	1 %

<sup>1</sup> City of Bozeman Comprehensive Wastewater Rate Study

<sup>2</sup> Based on 2000 census data

## IV. AFFECTED ENVIRONMENT

### A. PLANNING AREA

The City of Bozeman is located in southwest Montana along Interstate 90 in Gallatin County (see Figure 1- Site Map). The planning area includes approximately 42,400 acres and includes the incorporated city limits as well as adjacent areas that are likely to be developed over the 20 year planning period which can make use of City's wastewater treatment facilities (see Figure 2). The planning area generally consists of land that is moderately sloped and generally slopes from south to north. The northeast corner of the planning area consists of land with steeper slopes and varied terrain. The area is bisected by a variety of ditches, creeks and rivers. The notable water bodies include the East Gallatin River, Bozeman Creek, Rocky Creek and Bridger Creek. A network of small creeks and irrigation ditches crosses the westerly side of the planning area. Groundwater is near the surface in many areas within the planning area which provides for a significant amount of wetlands.



## B. FLOW PROJECTIONS

The population of the City of Bozeman has increased significantly in recent years. Population data available for the past several years clearly indicates a high rate of growth and an upward trend in growth rates. On a yearly average basis the growth rate over the last three years has averaged 4.7%. Based on these growth rates and continued growth trends, a 5% growth rate for the 20 year planning period was assumed. Using this growth rate, the City of Bozeman's population is estimated to be 56,800 in the year 2015 (phase 1 improvements) and 92,500 in the year 2025 (phase 1-3 improvements). The current average flow to the City's wastewater treatment facility is approximately 6 million gallons per day (MGD). Under phase 1 improvements, the average daily flow is expected to increase to 8.5 MGD with a peak hourly flow of 13.9 MGD.

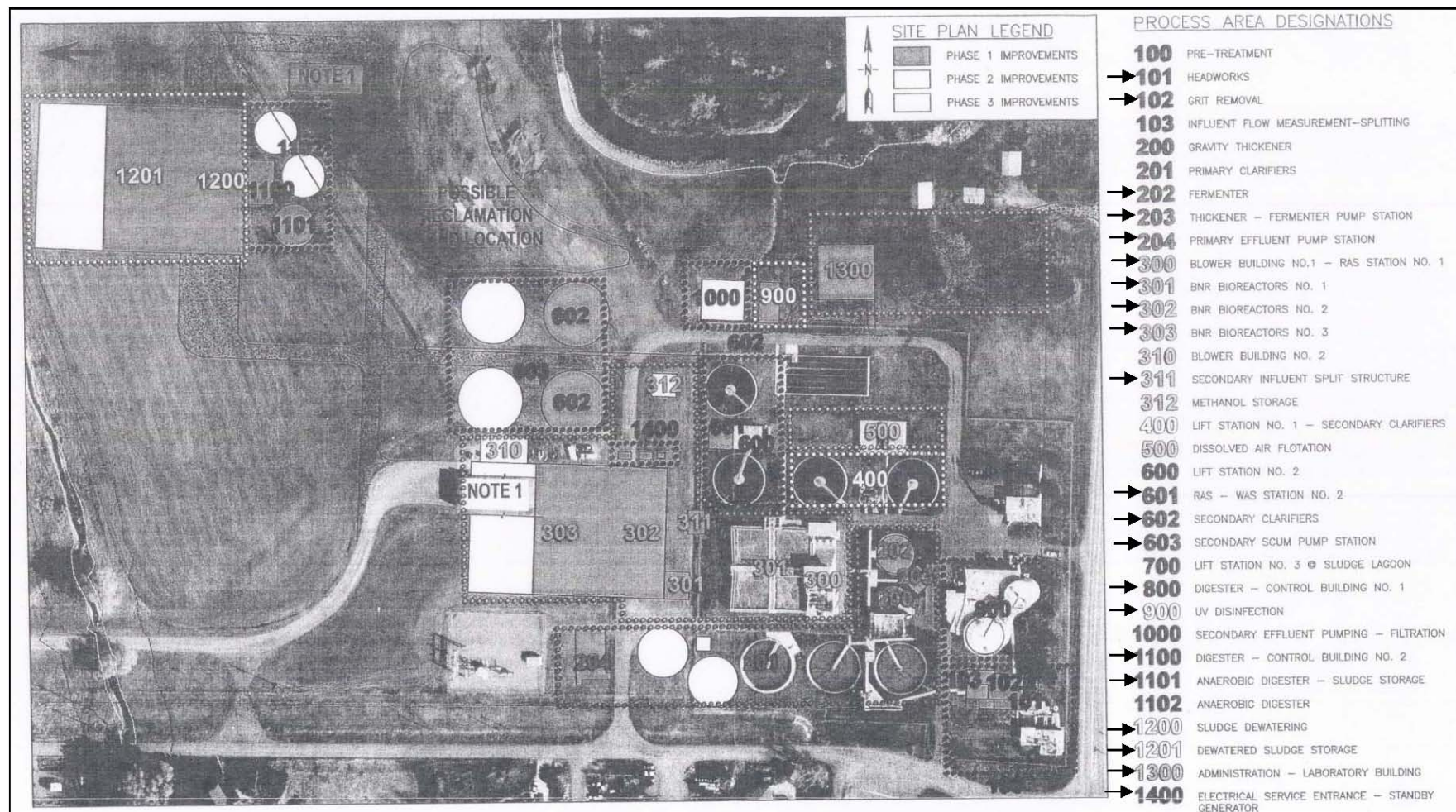
## C. NATURAL FEATURES

The depth to groundwater in the area of the recommended wastewater treatment plant improvements varies from 8' to 13', though some areas within the City's wastewater treatment plant property, such as the existing infiltration/percolation beds, have shallower depth to groundwater.

The East Gallatin River, the receiving stream, is classified as B-2 according to the Montana Surface Water Quality Standards. Waters classified as B-2 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

## D. MAPS

The City of Bozeman, as shown in Figure 1, is located in Gallatin County along Interstate 90. The planning area boundary that was used to estimate the area that could be served by the wastewater treatment facility is shown in Figure 2. A schematic of the preferred treatment alternative is shown in Figure 5. Figure 6 shows the current plant layout and the location of the proposed improvements.



Proposed improvements →

**Figure 6**  
**Recommended WWTP Improvements**  
**Phase 1**

## V. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

### A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Land Use – The existing wastewater treatment plant has been in operation at the current location since 1982. The surrounding properties to the North, South, and East of the plant are currently platted and largely developed with urban and commercial uses. The existing facility and recommended improvements will be designed to be compatible with the current and future commercial and urban land uses. While Phase 1 improvements will more than double the site footprint of the facility, sufficient space is available within the existing wastewater treatment plant boundaries to accommodate these improvements as well as future phases of improvements that have been identified to date. The existing WWTP property has historically been farmed but is now largely occupied by the existing wastewater facility. The currently unoccupied portions of the site are being farmed under lease agreement and utilized for biosolids injection. The proposed improvements will take some of this land out of agricultural production. There may be an indirect beneficial impact to the extent that the project influences development patterns towards less rural sprawl and more concentrated urban development. However, increased population within the study area, requiring development of agricultural lands to residential and urban areas, may offset this trend. No unique forest or agricultural lands are existing within, or adjacent to, the planning area.
2. Floodplains and Wetlands – The existing and proposed wastewater facilities will not be located within the 100-year floodplain. Portions of the wastewater treatment plant are in the flood fringe, situated within the 500-year floodplain. However, no wetlands are present at the proposed project location and as such, will not be impacted by the construction of a new wastewater treatment facility. There may be impacts to wetlands, however, associated with growth in and around the community as a result of this project. Before dredged or fill material can be discharged or placed into waters of the United States, including wetlands, a 404 permit must first be obtained from the U.S. Army Corps of Engineers. Before issuing this permit, any potential, future impacts to wetlands will be addressed.
3. Cultural Resources – The expanded wastewater treatment plant should not impact historic or cultural resources since all new facilities will be constructed within the existing plant boundary. The State Historic Preservation Office (SHPO) reviewed the proposed project. SHPO feels that since a majority of the project will be taking place in previously disturbed ground, and within street right-of-ways there is a low likelihood cultural properties will be impacted. As such, SHPO feels a cultural resource inventory is unwarranted at this time. However, should cultural materials be inadvertently discovered during this project, SHPO should be contacted and the site investigated. In addition, it is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures over fifty years old are to be altered, SHPO recommends that they be recorded and a determination of their eligibility be made.

4. Fish and Wildlife – Aquatic and animal life will not be significantly affected by the proposed project. The project should not affect any wildlife habitats and will provide water quality benefits that will protect and reduce the risk of harm to fisheries and other animals. There are six listed threatened or endangered species found to have ranges in Gallatin County, Montana. These species include the Bald Eagle, the Grizzly Bear, the Warm Spring Zaitzevian Riffle Beetle, the Gray Wolf, the Canada Lynx, and Ute Ladies' Tresses. The proposed project is not anticipated to directly impact the habitat of endangered plant or animal species.
5. Surface Water Quantity and Quality – Increased flows will be treated and discharged to the East Gallatin River. It is estimated that with the phase 1 improvements, the flow discharged to the East Gallatin River will eventually increase to 8.5 MGD. Increasing the volume discharged from the Bozeman wastewater treatment plant by 2.72 MGD over the existing design flow should not result in significant changes in water quality primarily due to the higher level of treatment that the new facility will provide. Scouring of the river due to the increased flow is not a concern since the additional flow increases the average mean monthly flow rate by less than 5%, and the highest mean monthly flow rate by less than 2%. In addition, the East Gallatin River is impaired due to low flow alterations. By increasing the discharge to the river the impacts associated with low flows should be lessened.

The Bozeman WWTP discharges to the East Gallatin River which is listed on the State's 2006 303(d) list of impaired water bodies (i.e., water bodies that do not support a beneficial use). Causes of impairment include: low flow alteration, nutrients (total phosphorus and total nitrogen), pH, excess algal growth, and other habitat alteration. Probable sources of the impairment include: riparian grazing, irrigated crop production, municipal point sources, and yard maintenance. Many of the water quality problems in the East Gallatin River can be associated with pollutants that are discharged from the WWTP, particularly nutrients. As a means of restoring water quality in the river, a total maximum daily load (TMDL) that will lower loadings to the river will be prepared in the future. Although the TMDL process has not yet begun for the East Gallatin River or immediate downstream water bodies, it is likely that load reductions for nutrients will be sought when the TMDLs are completed in the future. Because the TMDL process is not complete the facility cannot be expected at this time to be designed and constructed to meet the future (and unknown) TMDL and resulting permit limits. However construction of the proposed improvements is a necessary first step in allowing the facility to meet the permit limits that result from the TMDL process.

As a first step for reducing nutrient loads to the river and to prevent further declines in water quality in the receiving stream the City will construct the phase 1 improvements outlined previously. Since the wastewater treatment plant will be upgraded to remove nitrogen and phosphorus, loadings of these nutrients to the East Gallatin River will be reduced. Although the volume discharged to the East Gallatin River will increase from a current average daily flow of 6 MGD to 8.5 MGD the nutrient load to the river will in fact decrease due to improved treatment. It is estimated that the new facility will discharge 532 lbs/day total nitrogen and 71 lbs/day total phosphorus. This is a decrease of 41% and 72%

respectively from current nutrient loads being discharged into the East Gallatin River.

6. Groundwater Quantity and Quality – The depth to groundwater in the area of the WWTP improvements generally varies from 8' to 13'. Many of the existing WWTP structure foundations were constructed below the groundwater table and a pumped dewatering system was constructed to allow the groundwater to be lowered in the immediate area of the structures during maintenance activities. The dewatering system will be extended as necessary to protect any new structures and basins. Short term groundwater dewatering will be necessary during the construction of many of the new basins. Due to the relatively high soil permeability the short and long term groundwater dewatering systems have a limited area of influence generally confined to the dewatering system immediately around the structures of concern.

The existing treatment plant does have 18 groundwater infiltration/percolation (I/P) cells. These cells are rarely used but the City is authorized to discharge to them during emergency situations. Effluent discharged to the I/P cells must receive at a minimum primary treatment. No significant long-term impact to groundwater quality is anticipated by the proposed improvements.

7. Air Quality – Short term negative impacts on air quality will occur during construction from heavy equipment in the form of dust and exhaust fumes. Proper construction practices will minimize this problem. Project specifications will require dust control.

The existing wastewater treatment facility has some odors associated with the headworks, anaerobic digesters, and seasonal sludge holding ponds. These odors have not been a significant issue for the community, except during times of major treatment process disruption. The recommended replacement and expansion of the existing treatment processes, as well as the addition of advanced treatment facilities should help to reduce the frequency of adverse odors. Some degree of odors will continue to be associated with the facility. Odor reducing strategies and technologies (e.g., biofilters) will be incorporated in the future projects designs considerations as necessary.

8. Public Health – The discharge of a higher quality effluent from wastewater treatment plant will have a direct beneficial impact on the public health and safety by improving and protecting the East Gallatin River as a drinking water source and recreational amenity. Plant improvements will replace the existing chlorine gas disinfection system with an ultra violet light (U.V) disinfection system. This will eliminate a serious potential public health and safety risk for the plant staff and surrounding public.
9. Energy – The consumption of energy resources directly associated with construction of the recommended improvements is unavoidable but will be a short term commitment. Additional energy will be required to operate the expanded wastewater pumping and treatment facilities. The impact of this additional energy consumption will be minimized as much as possible through the use of energy efficient pumps, blowers, lighting, etc. In addition, to lower energy usage and operating costs, the biogas

generated from the anaerobic digesters will be used to fire hot water boilers and to power a microturbine induction generator that will generate electricity to offset part of the plant's electrical demand.

10. Noise – Short term impacts from excessive noise levels may occur during the construction activities. The construction period will be limited to normal daytime hours to avoid early morning or late evening construction disturbances. The existing and recommended facility improvements generate very little noise. The most noteworthy long term noise features associated with the facility are the exterior alarm annunciators, which operate under certain WWTP alarm conditions. The City is able to limit the times during which the alarms annunciate to the outside facility minimizing their impact. In addition, the plant is situated within an industrial area close to the interstate that is not sensitive to noise. As such, no significant long term impacts from noise will occur.
11. Sludge Disposal. Improvements will include a new dewatering and solids storage facility. The solids dewatering process will efficiently remove excess water from the biosolids, thereby reducing the volume of sludge hauled to the land application sites. All sludge generated at this facility will continue to be disposed of in accordance with EPA's 503 regulations.
12. Growth. Improvements of the wastewater treatment system may result in secondary impacts that are associated with the growth of the community. Population has been increasing rapidly in the Gallatin valley and the Bozeman area since the 1990's. This project would allow the City to manage its growth in a proactive manner and promote urbanization within its service area. Growth rates are projected from the past trend. The anticipated increase in population and development in the service area would result in increased flows to the wastewater treatment facility. Secondary impacts may include impacts for housing, commercial development, agriculture lands, solid waste, transportation and utilities.
13. Cumulative Effects. – No significant adverse impacts are anticipated.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction related impacts (i.e., noise, dust, traffic disruption, etc.) will occur, but should be minimized through proper construction management. Energy consumption during construction cannot be avoided.

VI. PUBLIC PARTICIPATION

The Wastewater Facilities Plan was presented to the City of Bozeman Commission in a work session on May 8, 2006 and in a Public Hearing on May 22, 2006. Five people spoke at the public hearing. Comments discussed during the public hearing included concern that the environmental review process was not being adequately addressed, support for regionalization, and concerns over the affects of increased flow in the river. The City Commission adopted the plan on a unanimous vote.



VII. AGENCY ACTION, APPLICABLE REGULATIONS AND PERMITTING AUTHORITIES

No additional permits will be required from the State Revolving Fund (SRF) section of the DEQ for this project after the review of the submitted plans and specifications. However, coverage under the storm water general discharge permit is required from the DEQ Water Protection Bureau prior to the beginning of construction.

VIII. RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS

☐ EIS                      ☐ More Detailed EA                      ☒ No Further Analysis

Rationale for Recommendation: Through this EA, the DEQ has verified that none of the adverse impacts of the proposed Bozeman Wastewater System Upgrade project are significant. Therefore, an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609, and 17.4.610. The EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant.

IX. REFERENCE DOCUMENTS

The following documents have been utilized in the environmental review of this project and are considered to be part of the project file:

1. Bozeman Wastewater Facilities Plan, 2007, prepared by Morrison Maierle, Inc. and HDR.
2. Uniform Application Form for Montana Public Facility Projects for the Bozeman Wastewater System Upgrades, June 2007
3. City of Bozeman Water Reclamation Facility Phase 1 Improvements Project Preliminary Design Report, August 2007, prepared by HDR and Morrison Maierle, Inc.
4. Fact Sheet (FS) for Permit Modification (MT-0022608), May 2007, prepared by Montana Department of Environmental Quality.
5. City of Bozeman Comprehensive Wastewater Rate Study, April 2007, prepared by HDR Engineering Inc.

X. AGENCIES CONSULTED

The following agencies have been contacted in regard to the proposed construction of this project:

1. The U.S. Fish and Wildlife Service (USFWS) reviewed the proposed project and determined the following listed and proposed threatened and endangered species may be present within the project area: Bald Eagle, Grizzly Bear, Warm Spring Zaitzevian Riffle Beetle, Gray Wolf, Canada Lynx, and Ute Ladies' Tresses. The USFWS requires all federal agencies involved in the project to comply with the Endangered Species Act. In addition, the USFWS stated that state and federal permits may be required if wetlands are impacted by the project.
2. The Montana Department of Natural Resources and Conservation (DNRC) reviewed the proposed project and determined there were no issues to address.

3. The Montana Historical Society's State Historic Preservation Office (SHPO) considered the impacts of the proposed project on local historic sites and cultural resources. According to their records, there have been several previously recorded sites within the designated search locales. In addition to the sites, there have been a few previously conducted cultural resource inventories conducted in the area. SHPO feels that since a majority of the project will be taking place in previously disturbed ground, and within street right-of-ways there is a low likelihood cultural properties will be impacted. As such, SHPO feels a cultural resource inventory is unwarranted at this time. However, should cultural materials be inadvertently discovered during this project, SHPO should be contacted and the site investigated. In addition, it is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures over fifty years old are to be altered, SHPO recommends that they be recorded and a determination of their eligibility be made.

The Bozeman Historic Preservation Program was also contacted. They responded indicating that a cultural resource inventory was unwarranted because the wastewater facility site has been previously disturbed and that they had no additional comments or concerns toward historic resources.

4. The U.S. Department of the Army Corps of Engineers (USCOE) reviewed the proposed project. The USCOE is responsible for administering Section 404 of the Clean Water Act, which regulates the excavation or placement of dredged or fill material below the ordinary high water mark of our nation's rivers, streams, lakes or in wetlands. The USCOE was unable to determine if any jurisdictional waters would be impacted by this project. As such, the USCOE asked that a permit application be submitted if the final design requires the placement of fill material in any jurisdictional waters. In addition, the USCOE recommended that a wetland delineation be completed if any wetlands are to be disturbed and that compensatory mitigation be required for any wetland impacts over 0.10 acres.
5. The Montana Department of Fish, Wildlife and Parks was contacted regarding the proposed project. They stated that this is a very important endeavor and indicated support for the project based on the facility's need to address increasingly stringent effluent quality requirements and capacity issues. They further stated that the proposed improvements should be made as soon as possible to avoid effluent discharge MPDES permit violations.

EA Prepared by:

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Mike Abrahamson, P.E.

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Date

EA Reviewed by:

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Paul LaVigne, P.E.

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Date

EA Approved by:

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Todd Teagarden, P.E.

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Date